Excess Pressure Valves
Type 44-7 and Type 44-8 (SEV)

Fig. 1 · Type 44-7 Excess Pressure Valve (DN 40)

Mounting and Operating Instructions

EB 2723 EN

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Note:
These Mounting and Operating Instructions EB 2723 EN refer to the Type 44-7 and Type 44-8 Excess Pressure Valves manufactured from August 2005 onwards (0085, see nameplate).

Note:
Non-electric actuators and control valve versions do not have their own potential ignition source according to the ignition risk assessment stipulated in EN 13463-1: 2001, section 5.2, even in the rare incident of an operating fault. Therefore, they ***do not*** *fall within the scope of Directive 94/9/EC.*
For connection to the equipotential bonding system, observe the requirements specified in EN 60079-14: 1977 (VDE 0165 Part 1) section 6.3.

General safety instructions

- *The excess pressure valve must be installed, started up and serviced only by skilled or semi-skilled staff in accordance with good engineering practice so that employees and third persons are not exposed to danger.*
  All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up and maintenance, must be strictly observed.
- *The valve complies with the requirements of the European Pressure Equipment Directive 97/23/EC. The declaration of conformity issued for a valve bearing the CE marking includes information on the applied conformity assessment procedure and will be provided on request.*
- *To ensure appropriate use, only use the valve in applications where the operating pressure and temperatures do not exceed the operating values specified in the order.*
- *Note that the manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.*
  Take appropriate safety precautions to prevent hazards that may be caused in the valve by the process medium, operating pressure or moving parts.
- *Make sure the valve is shipped and stored properly.*

1 Design and principle of operation

The excess pressure valve is typically used in district heating plants and large heating systems to maintain a constant desired upstream pressure. Increasing upstream pressure will cause the valve to open.

The **Type 44-7** and **Type 44-8 Excess Pressure Valves** consist of a valve body with a balanced valve plug and an actuator with an operating diaphragm and a spring assembly.

The **Type 44-8** is designed as a **safety excess pressure valve (SEV)**. It incorporates a second diaphragm to **ensure continued, safe operation** of the valve even upon failure of the operating diaphragm. If the upstream pressure exceeds a specified high value, the safety excess pressure valve will fail open.

The medium flows through the valve in the direction indicated by the arrow on the valve body. The upstream (excess) pressure to be controlled passes through the control line (11) and flows into the area above the operating diaphragm (6.1). It acts on the operating diaphragm, producing a positioning force. This force is used to position the valve plug against the force of the spring assembly.

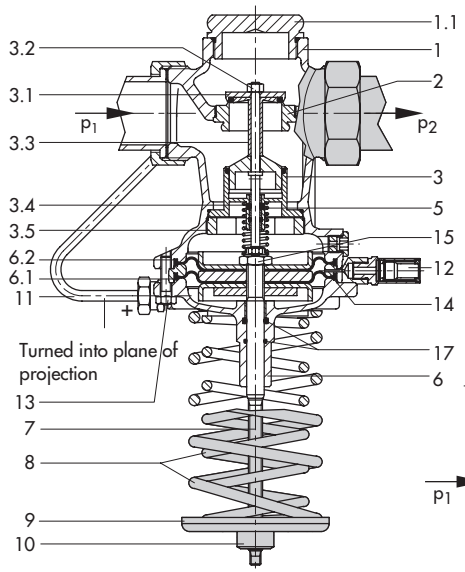
Turning the set point adjuster (10) will change the spring force and the set point.

Type test
The safety excess pressure valves (SEV) have been typetested by the German Technical Inspectorate (TÜV).
Type test approval numbers are available on request.

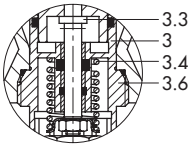
Table 1 · Tightening torques

Observe the tightening torques listed below when assembling the valve upon replacement of the plug or the diaphragm.

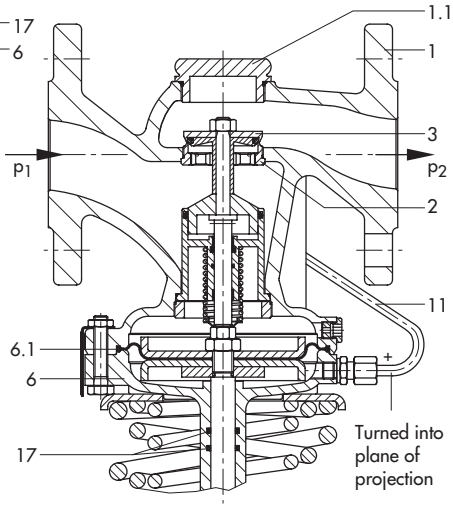
Item	Description	Nominal size	Torque
1.1	Body stopper	DN 15 to 25	70 Nm
		DN 32 to 50	110 Nm
13	Body screws	DN 15 to 32	8 Nm
		DN 40 to 50	18 Nm
2	Seat ring	DN 15 to 25	110 Nm
		DN 40 to 50	110 Nm
15	Diaphragm plate nut	DN 15 to 25	40 Nm
		DN 15 to 50	80 Nm
11	Control line connection	DN 15 to 50	22 Nm



Type 44-8 SEV (DN 32 to 50), with threaded body



DN 15 to 25, plug assembly



Type 44-7 (DN 32 to 50), with flanged body

1	Valve body	10	Set point adjuster
1.1	Body stopper	11	Control line
2	Seat ring	12	Diaphragm rupture indicator (Type 44-8 only)
3	Plug assembly	13	Body screws
3.1	Valve plug	14	Intermediate ring
3.2	Plug nut	15	Diaphragm plate nut
3.3	Plug stem	16	Diaphragm plate
3.4	Plug spring	17	O-ring
3.5	Plug stopper		
3.6	Guide nipple		
6	Actuator housing		
6.1	Operating diaphragm		
6.2	Safety diaphragm		
7	Actuator stem		
8	Spring assembly		
9	Spring plate		

Fig. 2 · Sectional drawings of Type 44-8 and Type 44-7

2 Installation

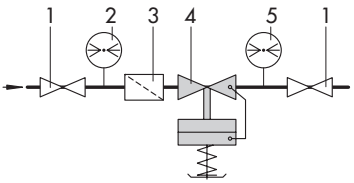
2.1 Mounting position

- Install the valve in a horizontal pipeline with the actuator and spring assembly suspended downwards.
- Make sure that the medium flows through the valve in the direction indicated by the arrow on the valve body.
- Use the connection nuts included in the delivery to install the valve.

2.2 Strainer

Note: *Do* ***not*** *connect a strainer upstream of the Type 44-8 SEV.*

Install a strainer (e.g. SAMSON Type 1 NI) upstream of the Type 44-7 Valve to prevent sealing particles, weld spatter and other impurities carried along by the process medium from impairing the proper operation, especially the tight shut-off of the valve.



1 Hand-operated shut-off valve
2 Upstream pressure gauge
3 Strainer (for Type 44-7 only)
4 Excess pressure valve
5 Downstream pressure gauge

Fig. 3 · Installation example

Make sure that the medium flow corresponds with the direction indicated by the arrow on the strainer body. Install the strainer with the filter element suspended downwards. Ensure that enough space is available to remove the filter.

2.3 Additional installation instructions

Ideally, hand-operated shut-off valves should be installed both upstream of the strainer and downstream of the excess pressure valve. They allow the pipeline section to be shut down for cleaning and maintenance routines or when it is not operated for long periods of time. Moreover, a plant shutdown will relieve the operating diaphragms.
To monitor the pressures prevailing in the plant, install pressure gauges both upstream and downstream of the valve.

3 Operation

3.1 Start-up

Fill the plant very **slowly** on start-up.

First open the shut-off valve downstream of the excess pressure valve and then the shut-off valve upstream of the excess pressure valve.
When carrying out a pressure test on the section of the pipeline equipped with the pressure regulator, make sure that the diaphragm actuator cannot be damaged by the test pressure. To proceed, remove the control line connected to the valve and seal the open port with a stopper (accessories: stopper 8323-0030 and seal 8412-0771).

3.2 Set point adjustment

Adjust the desired upstream (excess) pressure by means of the set point adjuster (10) of the spring plate (9), monitoring the upstream pressure indicated by the pressure gauge.

- Turn the set point adjuster clockwise to increase the set point pressure.
- Turn the set point adjuster counterclockwise to decrease the set point pressure.

3.3 Shut down

First close the shut-off valve upstream of the valve and then close the shut-off valve downstream of the valve.

4 Maintenance

The valve is subject to natural wear. Depending on the application conditions that prevail, inspect the valve at appropriately scheduled intervals.

CAUTION!
Prior to carrying out any work, always depressurize the relevant section and drain it depending on the medium.
First allow the relevant section of the plant to cool down to ambient temperature if high temperatures prevail.
We recommend that the valve be removed from the pipeline for carrying out any work on the valve.
When controlling freezing media, protect the regulator against frost.

If the upstream pressure drops considerably, tight shut-off is impaired by dirt between the seat and plug or due to natural wear.

For Type 44-8 (SEV–two diaphragms) only:

If the operating diaphragm fails (6.1), the safety diaphragm (6.2) will take over the control function. Simultaneously, a red marking appears in the diaphragm rupture indicator (12) (response at approx. 1.5 bar), or medium will leak from the test connection of the actuator.
Replace the defective operating diaphragm (6.1).

If the actuator stem leaks, disassemble the actuator as described in section 4.2. Inspect the actuator stem for any grooves and replace the O-rings (17) located in the actuator housing with new ones.

4.1 Cleaning or replacing the plug

– Refer to Fig. 1 on page 5 –

CAUTION!
The positioning springs are pre-tensioned. Take appropriate safety precautions. If necessary, make an appropriate disassembly tool or use SAMSON disassembly tool (order no. 1280-3098).

1. Remove the valve from the pipeline. Unscrew the control line (11). Disassemble the spring assembly (8) using a suitable tool (e.g. SAMSON disassembly tool 1280-3098).

2. Unscrew the body stopper (1.1).
3. Unfasten the body screws (13). Remove the actuator housing (6) with intermediate ring (14).
4. Unscrew the plug nut (3.2). Remove the valve plug (3.1) from the plug stem.
5. **For DN 15 to 25**
   Unscrew the guide nipple (3.6) of the plug assembly (3) using the socket wrench (order no. 1280-3001) and pull it out.
   You can make this wrench from a GEDORE screwdriver bit (IN 19-19), for example, by drilling a 17 mm hole (Ø 17) into the 19 mm hexagon bit.

   For DN 32 to 50
   First unscrew the plug stopper (3.5), then pull out the plug assembly (3).
6. Thoroughly clean the seat and plug assembly (3) and replace parts, if damaged. Check the control line (11) for any blockages.
   If the seat ring (2) is damaged, unscrew it and replace it with a new one.
7. Reassemble the valve in reverse order of the steps above, observing the tightening torques specified in Table 1 on page 4.

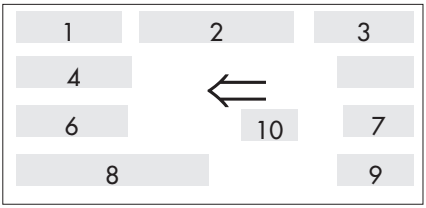
4.2 Replacing the diaphragm

– Refer to Fig. 1 on page 5 –

CAUTION!
The positioning springs are pre-tensioned. Take appropriate safety precautions. If necessary, make an appropriate disassembly tool or use the SAMSON disassembly tool (order no. 1280-3098).

1. Remove the valve from the pipeline.
2. Unscrew the control line (11). Disassemble the spring assembly (8) using an appropriate tool (e.g. SAMSON disassembly tool 1280-3098).
3. Unfasten the body screws (13). Remove the actuator housing (6) with intermediate ring (14).
4. Unscrew the diaphragm plate nut (15) and remove it from the actuator stem (7). Then lift off the diaphragm plate (16).
5. Replace the diaphragm(s).
6. For reassembly, proceed in reverse order, observing the tightening torques as indicated in Table 1 on page 4.

5 Nameplate



1	Model number
2	Configuration ID
3	Date of manufacture
4	Type designation
5	Nominal pressure PN or ANSI Class
6	K_{VS} or C_V coefficient
7	Max. perm. temperature in °C or °F
8	Set point range in bar or psi
9	Max. perm. differential pressure Δp
10	Arrow indicating direction of flow

Fig. 4 · Nameplate

6 Customer inquiries

If malfunctions or defects occur, contact the SAMSON After-sales Service for support.

The address of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on the Internet at www.samson.de, in a SAMSON product catalog or on the back of these mounting and operating instructions.

Should you have any inquiries, please submit the following details:

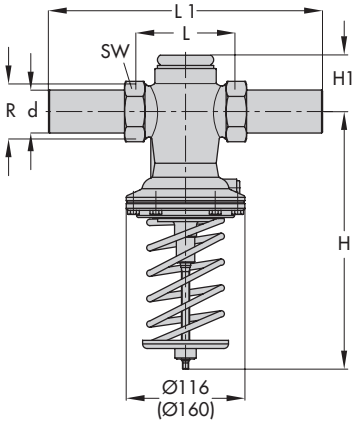
- Type, nominal size of the valve and its set point range
- Order and model numbers (see nameplate)
- Upstream and downstream pressures
- Temperature and process medium
- Min. and max. flow rates
- Has a strainer been installed?
- Installation drawing with exact location of the regulator and all additional installed components (shut-off valves, pressure gauge, etc.)

7 Dimensions and weights

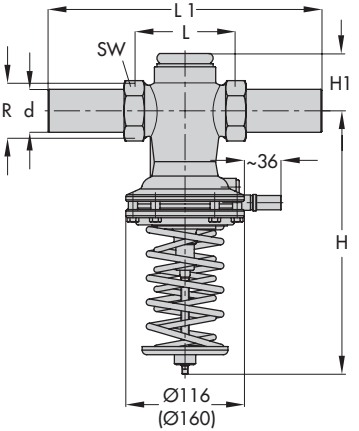
Dimensions in mm and weights in kg

Standard version with connection nuts with **welding ends**							
Nominal size	**DN**	**15**	**20**	**25**	**32**	**40**	**50**
Pipe diameter Ø d		21.3	26.8	33.7	42	48	60
Connection R		G ¾	G 1	G 1¼	G 1¾	G 2	G 2½
Width across flats SW		30	36	46	59	65	82
Length L		65	70	75	100	110	130
L1 with welding ends		210	234	244	268	294	330
Dimension H	Type 44-7	230			250	380	
	Type 44-8	235			255	395	
Dimension H1	Type 44-7	41			58		
	Type 44-8						
Weight, approx. in kg		2.0	2.1	2.2	3.5	9.0	9.5
Version with **flanged body** (DN 32, 40, 50)							
Length L3		130	150	160	180	200	
Weight, approx. in kg		3.5	4.1	4.7	11.7	13	
Special version with **threaded ends** (male thread)							
Length L2		129	144	159	180	196	228
Male thread A		G ½	G ¾	G 1	G 1¼	G 1½	G 2
Weight, approx. in kg		2.0	2.1	2.2	8.5	9.0	9.5

Dimensions



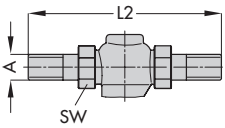
Type 44-7



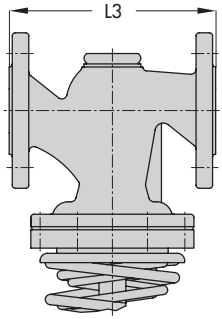
Type 44-8

Standard version with connection nuts with welding ends (specifications in parentheses for DN 40/50)

Types of connection



With connection nuts with threaded ends



Flanged body
(DN 32 to 50 only)

Fig. 5 · Dimensional drawings

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Conversion from chromate coating to iridescent passivation

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